UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
RYMAN, DANIEL J

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 06/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)	
Office Action Summary	10/075,430	OGAWA ET AL.	*NK*
	Examiner	Art Unit	
	Daniel J. Ryman	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _13 February 2002_ .

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-12_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-12_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _2/13-02_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☒ None of:

        1. ☒ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)		4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .	
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)		5) ☐ Notice of Informal Patent Application (PTO-152)	
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _3_ .		6) ☐ Other: .	

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities: the word hierarchical

is spelled as "hierarchial" throughout the application.

Appropriate correction is required.

Drawings

2.   The drawings are objected to because on Fig. 29 in the hierarchical routing table

"SLAID=1: Direct C" should read "SLAID=1: Router C." A proposed drawing correction or

corrected drawings are required in reply to the Office action to avoid abandonment of the

application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making
> and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it
> pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode
> contemplated by the inventor of carrying out his invention.

4.   Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject

matter which was not described in the specification in such a way as to enable one skilled in the

art to which it pertains, or with which it is most nearly connected, to make and/or use the

invention.

5.   The applicant stated in the specification that the invention's intended use is as a transition

between IPv4 and IPv6 networks. This statement allows for confusion because in the claims the

applicant specifies the invention's intended use is as a transition between hierarchical and non-

hierarchical networks. It is assumed that the IPv4 network is the claimed non-hierarchical

network; however, in a broad context, an IPv4 network could be viewed as a hierarchical

network containing two levels (one level being the inter-router network and the other level being

the host network). Since an IPv4 network could be viewed as hierarchical, there is confusion

between the specification and the claims, and thus the claims are not enabling. For purposes of

this office action, an IPv4 network is taken to be a non-hierarchical network.

### *Claim Rejections - 35 USC § 103*

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

7.   Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gervais

(USPN 5,856,974) in view of Tsuchiya et al (USPN 6,118,784).

8.   Gervais discloses an "address mapping gateway, used in an internetwork link, that

associates all nodes in a domain with a single network number (referred to as a domain network

address)" (col. 4 line 50-53) This gateway, as seen in Fig. 3, shows "an internetwork system 300

FIG. 3
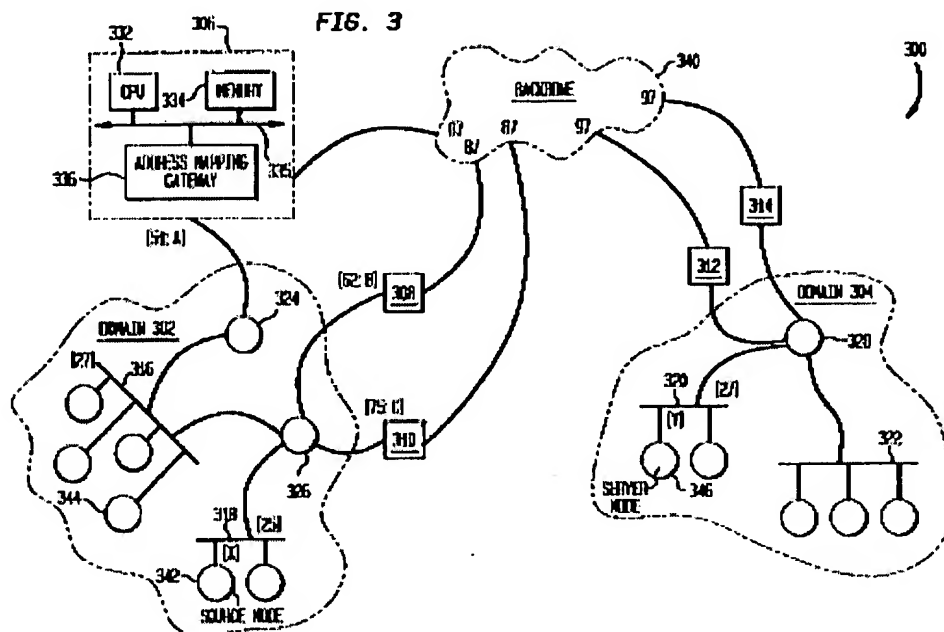
comprising a collection of domains 302-304 containing a number of local computer networks

316-322, each having one or more nodes, such as workstations and servers. The local networks

are connected by intermediate nodes, such as intradomain routers 324-328 and interdomain

routers 306-314 implementing the address mapping gateway of the present invention." (col. 6

lines 45-53) (assigning the non-hierarchical network a virtual hierarchy number that corresponds

to a hierarchy number in the hierarchical network). The word "associates" (col. 4 line 51) is

equivalent to "assigning." The phrase "domain network address" is equivalent to "virtual

hierarchy number that corresponds to a hierarchy number in the hierarchical network." The local

computer networks are non-hierarchical since they can consist of a single node while the

internetwork is hierarchical since it consists of two levels, namely the local network level and the

internetwork level.

9.   Gervais further discloses that this address mapping gateway "dynamically substitutes the 'globally-unique' domain network address and a 'domain-unique' gateway-mapped node address for a network number and node address, respectively, of a network layer address of a packet header received from a source node in the domain." (col. 4 line 55-60) (attaching the virtual hierarchy number to a packet to be relayed at a router located at an entrance from the non-hierarchical network to the hierarchical network when the packet is to be relayed between non-hierarchical networks via the hierarchical network). Gervais, however, does not disclose that the address mapping gateway attaches the virtual number to the non-hierarchical address. Tsuchiya teaches the use of an "IPv4-IPv6 converting apparatus [which] converts the IPv4 source address included in the received IPv4 packet into an IPv6 source address by adding fixed data to the IPv4 source address" (col. 3 lines 30-33). "Adding fixed data" is equivalent to "attaching the virtual hierarchy number." Tsuchiya does this "as a method of realizing a communication between an IPv4 terminal and an IPv6 terminal" (col. 1 lines 14-15). It is obvious to one of ordinary skill in the art of routers that the IPv4 terminal is located on an IPv4 compliant network, which could be interpreted as a non-hierarchical network, and the IPv6 terminal is located on an IPv6 compliant network, which is a hierarchical network. It would have been obvious to one of ordinary skill in the art of routers to modify Gervais in view of Tsuchiya in order to achieve the ability to communicate between a hierarchical and a non-hierarchical network.

10.   In addition, Gervais discloses "when an address mapping gateway receives a packet having the domain network address as the network number and a node address for which there is no mapping entry in its address mapping table, the gateway forwards the packet to the other address mapping gateways associated with the domain in which the destination node is located."

(col. 5 lines 34-39) This is equivalent to "performing a hierarchical routing control by the virtual hierarchy number within the hierarchical network."

11.   Gervais also discloses "when a packet is received for a destination node in the domain, the address mapping gateway substitutes the originally-assigned network number and node address for the domain network address and gateway-mapped node address, respectively, prior to forwarding the packet to the node." (col. 4 line 60-65) (removing the virtual hierarchy number from the packet to be relayed at a router located at an exit from the hierarchical network to the non-hierarchical network). Gervais, however, does not specifically disclose "removing" the virtual hierarchy number. Tsuchiya teaches the use of an "IPv4-IPv6 converting apparatus [which] deletes the fixed data from the IPv6 destination address included in the received IPv6 packet, converts the resultant IPv6 destination address to the IPv4 destination address" (col. 3 lines 44-47). "Deletes the fixed data" is equivalent to "removing the virtual hierarchy number." Tsuchiya does this "as a method of realizing a communication between an IPv4 terminal and an IPv6 terminal" (col. 1 lines 14-15). It is obvious to one of ordinary skill in the art of routers that the IPv4 terminal is located on an IPv4 compliant network, which could be interpreted as a non-hierarchical network, and the IPv6 terminal is located on an IPv6 compliant network, which is a hierarchical network. It would have been obvious to one of ordinary skill in the art of routers to modify Gervais in view of Tsuchiya in order to achieve the ability to communicate between a hierarchical and a non-hierarchical network.

12.   Claims 2-5 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gervais (USPN 5,856,974) in view of Tsuchiya et al (USPN 6,118,784) as applied to claims 1 and 7 above, and further in view of Perlman et al. (USPN 6,094,525).

13.   Regarding claims 2 and 8, Gervais does not disclose that "an address of the non-

hierarchical network is accommodated in an interface identification information block of an

address format of the hierarchical network, and the virtual hierarchy number is accommodated in

a hierarchy information block of the address format of the hierarchical network for conventional

packet relaying defined in the hierarchical network and transmitting routing information." Rather

Gervais uses the same fixed address length for both his non-hierarchical and hierarchical

addresses. Because the non-hierarchical address and the hierarchical address are the same length,

Gervais cannot accommodate the non-hierarchical address in the hierarchical address by adding

the virtual hierarchy number to the non-hierarchical address. Tsuchiya, however, teaches using a

"method of realizing a communication between an IPv4 terminal and an IPv6 terminal, [through]

a method of using an `IPv4-mapped IPv6 address`, and an `IPv4-compatible IPv6 address`,

...The `IPv4-mapped IPv6 address` is an IPv6 address in which "0" is set to the 127th to 48th

bits among 128 bits of the IPv6 address, "1" is set to the 47th to 32nd bits, and an `IPv4 address`

is set to the 31st to 0th bits. The `IPv4-compatible IPv6 address`, is an IPv6 address in which "0"

is set to the 127th to 32nd bits among 128 bits of the IPv6 address and the `IPv4 address` is set to

the 31st to 0th bits" (col. 1 lines 20-27). Here the IPv4 address (non-hierarchical address) is

contained, as broadly defined, in an "interface identification information block;" however, these

addresses do not contain the domain numbers, as broadly defined, in "the hierarchy information

block of the address format of the hierarchical network." Perlman, though, teaches the use of

"domain numbers that identify the appropriate destination and source domains. As noted, the

domain numbers are added to the conventional network address" (col. 3 lines 61-63). Perlman's

method "efficiently enhances routing among nodes of different domains of the networks" (col. 3

lines 35-38). Perlman adds the domain numbers or "virtual hierarchy number" to the

conventional network address thus creating, as broadly defined, a "hierarchy information block

of the address format of the hierarchical network." It would have been obvious to one of ordinary

skill in the art of routers at the time of the invention to use Tsuchiya's address scheme coupled

with Perlman's system and apply it to Gervais' interdomain network in order to achieve the

ability to efficiently communicate between a hierarchical and a non-hierarchical network.

14.   Claims 3-5 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gervais (USPN 5,856,974) in view of Tsuchiya et al (USPN 6,118,784) and Perlman et al

(USPN 6,094,525) as applied to claims 1-2 and 7-8 above, and further in view of Tsuruoka

(UPSN 6,101,189).

15.   Regarding claims 3 and 9, Gervais discloses that "the address mapping gateway

maintains an address mapping table that provides a cross-reference between (1) a source node

address and the network number of the local network in which the node resides, and (2) a

gateway-mapped node address generated by the address mapping gateway." (col. 4 line 66 – col.

5 line 4). Gervais does not disclose "a hierarchical routing table that performs routing search by

using only the hierarchical information block as a key, and a conventional routing table that

performs routing search by using the hierarchical information block hierarchical information and

the interface identification information block as keys." Tsuruoka, however, teaches a "packet

routing operation for routing a packet from the external network to a terminal of the local

network...When a packet is received by the gateway apparatus via the external network interface

thereof, a determination is made as to whether the destination address of the arriving packet is

the Layer 3 address assigned to the external network interface [see Fig. 8 step S20]. If the

answer is negative, the packet is discarded...[I]f the answer is affirmative, the conversion table is

referred to so as to determine if the conversion table contains an exact combination of the

addresses and port numbers of a packet arriving from the external network [see Fig. 8 step

S22]...If there is no match, it means that the routing destination of the packet is unknown so that

the packet is discarded. If it is found...that the matching combination is found in the conversion

table...[t]he arriving packet is then translated...The packet having the header thereof translated

is then transmitted to the local network." (col. 9 line 50-col. 10 line 29)(see also Fig. 5A-5C).

Tsuruoka does this to ensure that "no transmission of routing information takes place" (col. 2

line 45-46). Tsuruoka's system uses, as broadly defined, "a hierarchical routing table that

performs routing search by using only the hierarchical information block as a key" when it

receives a packet from the external network and analyzes its destination by using only the

destination address. This system uses "a conventional routing table that performs routing search

by using the hierarchical information block hierarchical information and the interface

identification information block as keys" when it analyzes the received packet with the

"conversion" table using both the destination address and the port numbers to see if the packet is

destined for a local network address. It would have been obvious to one of ordinary skill in the

art of routers to combine Gervais in view of Tsuchiya's system with Tsuruoka's packet routing

operation in order to ensure that no transmission of routing information would take place

between the incompatible hierarchical and non-hierarchical systems.

16.   Regarding claims 4 and 10, since each of the interdomain routers implements the address

mapping gateway (col. 6 lines 49-53), and since the address mapping gateway includes the

hierarchical routing tables (col. 4 line 66 – col. 5 line12), and since information packets in the

hierarchical network are transferred between the hierarchical routers using the global or

hierarchical address (col. 5 lines 34-44), it is obvious that "each router of the hierarchical

network uses the hierarchical routing table when relaying a packet between the hierarchical

network and another hierarchical network."

17.   Regarding claims 5 and 11, Gervais discloses that the interdomain router uses both the

global (hierarchical) and the domain (conventional) tables when relaying a packet from the

hierarchical network to the non-hierarchical network and from the non-hierarchical network to

the hierarchical network. (col. 4 line 66 – col. 5 line 12) Therefore "each router of the

hierarchical network uses the conventional routing table when relaying a packet from the

hierarchical network to the non-hierarchical network, and from the non-hierarchical network to

the hierarchical network."

18.   Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gervais

(USPN 5,856,974) in view of Tsuchiya et al (USPN 6,118,784), Perlman et al (USPN 6,094,525)

and Tsuruoka (UPSN 6,101,189) applied to claims 2-5 and 8-11 above, and further in view of

Miki (USPN 6,046,999).

19.   Gervais in view of Tsuchiya, Perlman, and Tsuruoka does not disclose that "the router

located at a boundary of the non-hierarchical network and the hierarchical network recognizes a

packet relay from the non-hierarchical network to the hierarchical network, and from the

hierarchical network to the non-hierarchical network, by using a receiving interface name and a

transmission interface name when relaying the packet." However, Miki discloses a router that

uses a "switch port number…which is set for each of various interfaces such as the ATM

interface, the IP-support frame relay interface, etc. The IP controller…recognizes the port with

the switch port number." (col. 7 lines 52-54). Miki's router, which recognizes the format of data

of an information packet based upon the port at which it arrived, has the benefit of "provid[ing] a

router apparatus which can support various types of communications." (col. 2 lines 59-61) As

broadly defined, the serial number, as described above, is interpreted as an "interface name."

Thus it would have been obvious to one of ordinary skill in the art of routers at the time of the

invention to modify Gervais in view of Tsuchiya, Perlman, and Tsuruoka to include the

identifying means of Miki in order to allow the "mixed environment" router to "support various

types of communications" by recognizing from the port at which the data arrived whether it was

a hierarchical type packet to be converted to a non-hierarchical format or a non-hierarchical

packet to be converted to a hierarchical format.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Daniel J. Ryman whose telephone number is (703)305-6970. The

examiner can normally be reached on Mon.-Fri. 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Huy Vu can be reached on (703)308-6602. The fax phone numbers for the

organization where this application or proceeding is assigned are (703)308-6743 for regular

communications and (703)308-9051 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703)305-3900.

Art Unit: 2665

DJ2

Daniel J. Ryman
June 13, 2002

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